AD-A262 045
|||||||||||||||||||||

1992
Executive Research Project
A119

DTIC
S ELECTE
MAR 3 0 1993
C **D**

Targeting for
Army Deep Attack

Colonel
William L. Bond
U. S. Army

Faculty Research Advisor
Colonel Maurice R. Alexander, USA

The Industrial College of the Armed Forces
National Defense University
Fort McNair, Washington, D.C. 20319-6000

93-06382
|||||||||||||||||||||

98 3 29 038

REPORT DOCUMENTATION PAGE

1a. REPORT SECURITY CLASSIFICATION Unclassified	**1b. RESTRICTIVE MARKINGS**
2a. SECURITY CLASSIFICATION AUTHORITY N/A	**3. DISTRIBUTION/AVAILABILITY OF REPORT** Distribution Statement A: Approved for public release; distribution is unlimited.
2b. DECLASSIFICATION/DOWNGRADING SCHEDULE N/A	

4. PERFORMING ORGANIZATION REPORT NUMBER(S) NDU-ICAF-92-A119	**5. MONITORING ORGANIZATION REPORT NUMBER(S)** Same

6a. NAME OF PERFORMING ORGANIZATION Industrial College of the Armed Forces	**6b. OFFICE SYMBOL** *(If applicable)* ICAF-FAP	**7a. NAME OF MONITORING ORGANIZATION** National Defense University
6c. ADDRESS (City, State, and ZIP Code) Fort Lesley J. McNair Washington, D.C. 20319-6000		**7b. ADDRESS (City, State, and ZIP Code)** Fort Lesley J. McNair Washington, D.C. 20319-6000
8a. NAME OF FUNDING/SPONSORING ORGANIZATION	**8b. OFFICE SYMBOL** *(If applicable)*	**9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER**
8c. ADDRESS (City, State, and ZIP Code)		**10. SOURCE OF FUNDING NUMBERS**

PROGRAM ELEMENT NO.	PROJECT NO.	TASK NO.	WORK UNIT ACCESSION NO.

11. TITLE (Include Security Classification)

Targeting for Army Deep Attack

12. PERSONAL AUTHOR(S) William L. Bond

13a. TYPE OF REPORT Research	**13b. TIME COVERED** FROM Aug 91 TO Apr 92	**14. DATE OF REPORT (Year, Month, Day)** April 92	**15. PAGE COUNT** 39

16. SUPPLEMENTARY NOTATION

17. COSATI CODES			**18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)**
FIELD	GROUP	SUB-GROUP	

19. ABSTRACT (Continue on reverse if necessary and identify by block number)

SEE ATTACHED

20. DISTRIBUTION/AVAILABILITY OF ABSTRACT ☒ UNCLASSIFIED/UNLIMITED ☐ SAME AS RPT. ☐ DTIC USERS	**21. ABSTRACT SECURITY CLASSIFICATION** Unclassified
22a. NAME OF RESPONSIBLE INDIVIDUAL Judy Clark	**22b. TELEPHONE (Include Area Code)** (202) 475-1889 **22c. OFFICE SYMBOL** ICAF-FAP

DD FORM 1473, 84 MAR 83 APR edition may be used until exhausted.
 All other editions are obsolete.

ABSTRACT

TARGETING FOR ARMY DEEP ATTACK by COL William L. Bond, U.S. Army.

Until recently, deep attack, or precision interdiction as it is sometimes called, was the exclusive domain of the Air Force. But with the fielding of improved, longer range acquisition and attack systems, the Army has now gained the capability to kill targets before they can be committed.

This paper explores the Army's new concept of **"Decide, Detect and Deliver"** which is used to accomplish the Deep Attack Targeting (DAT) mission. It also explores it's strengths and weaknesses, and provides some recommendations on resolving some of the identified shortfalls.

TARGETING FOR ARMY DEEP ATTACK by COL William L. Bond, U.S. Army.

1992
Executive Research Project
A119

Targeting for
Army Deep Attack

Colonel
William L. Bond

U. S. Army

Faculty Research Advisor
Colonel Maurice R. Alexander, USA

The Industrial College of the Armed Forces
National Defense University
Fort McNair, Washington, D.C. 20319-6000

DTIC QUALITY INSPECTED 1

DISCLAIMER

TARGETING FOR ARMY DEEP ATTACK

"Emerging advanced technologies allow us to see the battlefield with great clarity and to employ precision systems to dictate the terms of battle."

INTRODUCTION

Until recently, deep attack was the exclusive domain of the Air Force. But with the fielding of improved, longer range acquisition and attack systems, the Army has now gained the capability to kill targets in this area of the battlefield. Army Tactical Missile System (ATACMS)[1], attack helicopters, and maneuver units are the present systems, with a few more, such as Brilliant Anti-armor Submunition (BAT)[2], under development.

The Army's new concept of **"Decide, Detect and Deliver"** or targeting for Army Deep Attack worked well during Desert Storm and should be significantly enhanced by the addition of new systems. So well did this new procedure work that the Army should look carefully at supporting other service or joint programs in an effort to enhance the Army's Deep Attack Targeting (DAT) capability.

Deep attack can be thought of as attacking those follow-on forces, second-echelon units and support, at depth, before they can concentrate their combat power on the front line (Close Attack). Depth, in regards to Deep Attack, is a function of time

---

[1] See Index for system descriptions.

[2] See Glossary for listing of all acronyms.

1

not distance. The CORPS is concerned with units that are more than a days road march from the front line. Deep Attack operations include the fires of artillery, rockets, missiles and air support (multi-service). Because of the limited range of Division assets, this mission is executed at the CORPS or higher levels. As an example, second-echelon tank units a day or more road march from the main battle area would be considered a sutiable deep attack target.

This paper will explore the procedures used to accomplish the DAT mission, the Army's successes and areas of future challenge.

Additionally, this report will discuss the strengths and weaknesses of the Army's DAT capability and provide some recommendations on resolving some of the identified shortfalls.

Political and Military Impact

Desert Storm has proven a benchmark for the Army's DAT capability. For the first time, the Army did not have to rely solely on other services to attack targets deep within enemy territory. This significantly helped shape the CORPS area of the battlefield.

While there were numerous Army successes in Desert Storm, there was also the proverbial "Fly in the Ointment" - Scud missiles. Just when the services were prepared to attack a limited number of target sets, ones that were relatively fixed, along came the mobile "Theater Ballistic Missile" (TBM). Although

not unknown, the employment of TBM's against civilian and military targets, especially when the possibility existed that they would be used to deploy chemical or biological weapons, was a political nightmare. So for the first time, TBM's became a priority DAT. (Sources suggest that Scud launchers and launch facilities were the highest priority intelligence target).[1] Although not the only target that the coalition forces tried to attack during the war, they were by far the most difficult because of their mobility. As a result, Scud TBM's became the baseline by which all such future targets would be measured.

This target set, TBMs, traditionally limited to a handful of industrialized nations, is fast becoming a fixture in many regional conflicts (e.g. Iraq-Iran War and Desert Storm). Within the "New World Order," the military buildup in developing countries is perhaps even more worrisome than the remaining capability in the Commonwealth of Independant States. As demonstrated during the Persian Gulf conflict, some of these countries are far more likely to use their arsenals during war.

These developing countries have eagerly acquired missiles for the same reasons that motivated their predecessors: to deter attack, intimidate enemies, build a technological base, and win prestige.[2]

Missiles that the U.S. relegates to battlefield tactical targets could, as the Iran-Iraq War demonstrated, easily have devastated the capitals of Israel and Saudi Arabia. Our intelligence estimates that Iraq continues to accumulate Scuds -

more than 800 since the conflict ended. Production continues on a round-the-clock basis at an underground factory that escaped detection during the air assault by the Allies.[3]

Estimates are that by the year 2000: 20 nations will have ballistic missiles (8 of which currently have or are close to acquiring nuclear capabilities). Thirty countries will have chemical weapons, 10 countries will be able to deploy biological weapons.[4] Imagine how the Persian Gulf War might have turned out had Iraq employed chemical, biological or nuclear Scuds against Saudi Arabia or Israel. What effect would the Patriot missile have had on these weapons? What would have been the Israeli's response to such an attack?

Before we continue to explore the threat and problems of Desert Storm, let me review quickly the DAT concept.

IMPLEMENTATION OF THE ARMY'S DAT

Targeting is the process of identifying enemy targets for possible engagement and determining the appropriate attack system to be used to capture, destroy, degrade, or neutralize the target in question. The point of targeting is to identify resources that the enemy can least afford to lose. Denying these resources to the enemy strips him of the initiative; it forces him to conform to friendly battle plans. A target is an enemy function, formation, equipment, facility, or terrain planned for capture, destruction, neutralization, or degradation in order to disrupt, delay, or limit the enemy. Thus, an efficient and organized

4

targeting effort is critical to the success of Airland Battle operations.[5] **This is the way the CORPS Commander shapes the battlefield to fit his plan.**

As previously noted, the Persian Gulf War brought the first use of the concept of targeting for Army deep attack. Traditionally, the Air Force played the dominant role in attacking deep targets in the CORPS area under the Air Interdiction (AI) doctrine.[6] The result has been that the Army CORPS commander was virtually dependant on the Air Force to prepare his front for the ground offensive. Although the Air Force has frequently done this job well by their standards, the CORPS Commander has sometimes had different objectives. For example, during Desert Storm the Air Force was "reluctant" to attack targets it could not "see." The result was that the Army's ability to attack deep complimented the air contingent and established the Army component as an integral part of the ground attack force shaping the battlefield.[7]

During Desert Storm, the combination of the Air Force JSTARS, Defense Support Program (DSP), Rivet Joint and the Army's Guard Rail/Common Sensor (GRCS), helped the CORPS acquire deep targets and provided targeting information that allowed the targets to be destroyed. Still, some question the Army's ability to **quickly** execute this new mission.

DISCUSSION

To implement this concept, the Army used the "Decide, Detect and Deliver" proceedure from Field Manual (FM) 6-20-10, "TACTICS, TECHNIQUES, AND PROCEDURES FOR THE TARGETING PROCESS." The publication of this manual in March 1990 set forth the functions of Decide, Detect and Deliver as the preferred process to target Army deep attack. The DAT problems that did surface during Desert Storm were ones of implementation rather than concept. Those implementation challenges need to be addressed. The important point here is that the current Army system works, but not as well as it could (and needs to) in order to meet the future threat. A discussion of some deficiencies in the fundamentals of the DAT concept is necessary before identifying the specific outstanding issues.

TARGETING PROCESS

To focus the targeting process, a prioritized list of targets is developed. This list specifies -

o What targets are to be acquired and attacked.

o When they are to be acquired and attacked.

o What is required to defeat the target.

Selected crucial targets are also identified for deliberate follow-up action and analysis.[8]

The targeting methodology is what is meant by decide-detect-deliver. These three functions are inherently intertwined.

6

DECIDE

The planning associated with a successful targeting effort requires close interaction between the commander and the intelligence, plans, operations, and fire support cells. The staffs must clearly understand -

   o The unit mission.

   o The commander's concept of the operation and his intent.

   o The commander's initial planning guidance with respect to target priorities.[9]

With this information, the staff officers can prepare their respective estimates. From the standpoint of targeting, the support, intelligence, and operations estimates are interrelated and must be closely coordinated among the cells. The **decide** function gives a clear picture of the priorities that apply to the following:

   o The tasking of target acquisition assets.

   o Information processing.

   o The selection of an attack means.

   o The requirement for postattack assessment.[10]

The **decide** function results in the commander issuing his targeting guidance and Priority Intelligence Requirement (PIR) and Information Requirements. He also approves the High Priority Target (HPT) list, the target selection standards, the commander's attack guidance, and any requirement for target damage assessment. The target priorities developed in the **decide** function are translated into the intelligence collection

plan and the target acquisition tasking in the operation order (OPORD) and its annexes. All collection assets available to the commander must be fully used to support the target acquisition effort.[11]

The decisions that must be made may be reflected in visual products. They are as follows:

o The high-payoff target list (what targets should be acquired and attacked).

o target selection standards (what accuracy requirements produce attackable targets).

o The collection plan (where and when targets should be found and who can find them).

o The attack guidance matrix (how the targets should be attacked).[12] (See Note #[3])

DETECT

As these target acquisition assets gather information, they report their findings back to their controlling headquarters, which in turn pass pertinent information to the tasking agency. The information gathered by the multitude of collection assets must be processed to produce valid targets. Not all the information reported will benefit the targeting effort, but it may be valuable to the development of the overall situation. To

---

[3] The collection plan is an Intelligence Officer's (S2 or G2) product that is important to the targeting process. Army FM 34-1, (S)FM 34-2, an FM 34-10 are referenced for a discussion of collection plans.

hasten the processing of targets, the CORPS uses the target priorities developed in the decide function. As these targets are developed, appropriate attack systems are tasked following the commander's guidance and the requirements of the attack system managers.[13]

DELIVER

The main objective of this function is the attack of targets. The selection of an attack system or a combination of systems leads to the technical solution that specifies the detailed attack characteristics. Such a solution could be represented by selection of the following:

    o A field-artillery-type munitions.

    o The number of rounds.

    o The unit to conduct the attack.

    o The time of attack.[14]

If the target damage assessment reveals that the commander's guidance has not been met, the entire targeting process must re-focus on the target.[15]

DESERT STORM DEFICIENCIES

Air Force Deep Attack - From commanders feedback, it would appear that the Army was not happy with the Air Force Support for deep attack missions during Desert Storm. Some of this is justified, and some is not. During the Persian Gulf Crisis, to attack Air Interdiction (AI) targets, the Air Force reverted back to their

Viet Nam days with FAST FACs - Air Force Command and Control aircraft. Essentially, the battlefield beyond the Fire Support Coordination Line (FSCL) was divided up into "Kill Boxs, a longitude by latitude box that was essentially an Air Force Free Fire Zone. This meant that Army surface to surface systems, such as the Army Tactical Missile System (ATACMS), had to coordinate its attack in these "Kill Boxes". These "Kill Box's" were controlled by the Air Force Central Command (AFCENT).

The FAST FAC, would verify the air interdiction targets within his designated "Kill Box". This procedure came about because pilots too often were not finding targets at the designated location, either because of faulty target location or because they had moved. Lt. Gen. Charles Horner, commander of AFCENT, directed that the FAST FAC reconnoiter his designated "Kill Box" and verify that the target was in fact there.

Then, as attack aircraft arrived in the area to attack the target, he would either send them against the assigned target (if he had found the target) or direct them against other high value targets the FAST FAC had found while flying through his designated "Kill Box." Problems immediately arose between the Air Force and the Army, specifically at the CORPS level, where the CORPS Staff saw the Air Force fail to attack all of the assigned targets that were on the Air Target Order.

The CORPS worked hard on target development, justified their targets through AFCENT to CENTCOM, and felt cheated when any of the few targets that did get placed on the Air Target Order were

not attacked. Much of this ill will could have been averted if there had been a feedback system in place to report on each target. Unfortunately, the Air Force did not provide rationale each time a specific target was not attacked and even though the diversion may have been well justified, it was seldom appreciated by the Army.[16] Additionally, camouflaging, decoys and digging in of targets by the Iraqis may have made it very difficult for the FAST FACs to spot targets and led them to believe they were not there or had moved.

The Commander in Chief (of unified or specified command) CINC, General Schwarzkopf, assumed the role of Land Component Commander instead of delegating this to a service component command such as the Commanding General 3d Army. Thus, the Joint Force Air Component Commander, Lt. Gen. Horner, who was also AFCENT concerned himself with the ground component at Echelons Above CORPS. Now in Europe or in CORPS level training exercises in the Continental United States, the CORPS Commander and his staff had trained to work directly with the Air Force. In this case, the CINC became the Land Component Commander (LCC) because of the multi-national challenge that he was better able to address. Lt. Gen. Horner understood the CINC's campaign plan and was executing the air battle to the CINC's, Gen. Schwarzkopf's, satisfaction. Within the Air Target Order, the CINC wanted to concentrate on the Iraq's Republican Guard first, working from the north to south, concentrating on targets along the Forward Edge of the Battle Area (FEBA) shortly

before the ground offensive kicked-off (G-Day). This was how he wanted to "shape the battlefield." It was the CINC's battlefield and also the LCC's battle area. The CORPS Commander's priority lay in hitting targets that were in their area of interest, those enemy targets that would affect their operation.[17] This was the battefield area they wished to shape in preparation for the ground offensive.

It is easy to see how the lack of communication between the Air Force and Army led to problems in attacking targets. This should be fairly easy to correct. We now need to discuss the current capability to acquire deep attack targets.

EXISTING DAT CAPABILITY

ARMY SYSTEMS

GUARDRAIL/COMMON SENSOR (GRCS) - The GRCS worked well in acquiring most types of targets and transmitting the information to the CORPS Intelligence Center. Here the information was collated and passed to the CORPS targeting cell for input into the deliver portion of the cycle.

COMMANDERS TACTICAL TERMINAL (CTT) - Without the CTT, GRCS data went only to the CORP Intelligence Center.[18] While this provided good targets for tomorrow's missions, the inability to pass time-sensitive data directly to the CORPS Fire Support Element or the Multiple Launch Rocket System (MLRS) Battalion (ATACMS is fired from the MLRS Launcher by the CORPS MLRS Battalion) eliminated the "Quick Fire Channel", needed for

12

engagement of those hard to find, very mobile systems such as Scud launchers. This problem will soon be alleviated with the fielding of more CTTs, which will not only be fielded to the CORPS Fire Support Element, but also to the CORPS MLRS Battalions.

AIR FORCE SYSTEMS

JOINT SERVICES TACTICAL AIRBORNE RECONNAISSANCE SYSTEM (JSTARS) -
JSTARS has two search modes, Wide Area Search (WAS) and Synthetic Apperture Radar (SAR). The one used most during Desert Storm; WAS -(as the name implies) looks more at the whole battlefield. The other, SAR - looks at a much smaller area, but provides the operator with much more detail within this area. During Desert Storm, only one mode could be used at a time, but in the fielded system, you will be able to use both simultaneously.[19]

JSTARS flew only 44 days during Desert Shield/Storm, with just two aircraft, and the coverage was for merely ten to 11 hours a day.[20] But for the missions it flew, it was extremely effective. However, while there were Army targeteers on board they reported to an Air Force mission commander. The Air Force commander worked with the Army members to try to identify targets and kill them. The CORPS competed for JSTARS time just like any scarce asset, but by and large got their fair share. The Ground Station Module, used to disseminate JSTARS information, was used correctly by AFCENT, but because of the limited numbers of modules at each CORPS, not everyone who needed the information

13

got it or got it in a timely manner. The Army needs to support JSTARS and GSM. JSTARS is scheduled to be fielded in the FY 94-97 time period. DOD plans to buy 20, five for each of the planned four CORPS, so there will be 24 hour coverage during crises.[21]

RIVET JOINT AND THE TACTICAL INFORMATION BROADCAST SYSTEM (TIBS) - This system worked very well and was used extensively by the Air Force in their deep attack targeting. It is my opinion that this system was under utilized by the Army, especially in the CORPS FSE. The initial utilization of the TIBS receiver was only for warning of a chemical attack in the CORPS NBC Cell. Additionally, because it had just been fielded by the Air Force, most Army Intelligence Personnel lacked training on the system and had no idea of what it was or what it was to be used for.[22]

DEFENSE SUPPORT PROGRAM (DSP) - During Desert Storm, early warning of Scud attacks were provide by DSP and the Princilik radar in Turkey. This was and is the only means now available to detect launch of theater ballistic missiles, and even though DSP is built only for strategic missile detection and had never before been used to detect theater ballistic missiles, it was successful in providing accurate launch detection in sufficient time to alert the Active Defense Systems (Patriot) and the general populous. The transporting of the launch detection was awkward and time consuming having to come all the way from Space Command in Colorado Springs. It was not, however, able to accurately pinpoint launch location making it impossible to

14

quickly attack the launcher after firing. There are currently no systems to be fielded in the near future that can give accurate, timely and precise information of the location of Theater Ballistic Missile launchers.[23]

ARMY TACTICAL MISSILE SYSTEM (ATACMS) - If ATACMS was in range, then it got the mission. Additionally, from the first day of the war, ATACMS was able to maneuver and was employed, occasionally out to 120 Km. The only distractor was the request by AFCENT to review all ATACMS targets before they were fired. The reason for this request was two fold. First their were only a limited number of ATACMS missiles in country, and secondly, some of the targets that had been fired were, in the opinion of AFCENT, of questionable value.[24]

One major problem in using ATACMS was getting permission to fire across the Fire Support Coordination Line (FSCL) into an Air Force controlled "Kill Box". Since the "Kill Box" is controlled by the Air Force component, (remember the FAST FAC's fly in the "Kill Box"), the Air Force asked for two hours notice on changes to these "Kill Boxs" (from experience in Vietnam, the Air Force does not believe in the Army adage of "Big Sky, Little Bullet"). For the Army's part, this could be entirely too long, depending on the situation, and a much faster method needs to be developed. Currently, the Army and the Air Force are reviewing the procedures. Now that most aircraft have digital navigational computers that only require that a couple of coordinates be input

to change the line on the pilot's navigational computer, the old "recognizable terrain feature" can be replaced quickly with three or four coordinates. For ATACMS during Desert Storm, a separate procedure was set-up, described below. This is more an "Air Space Management Issue" than a "Coordination Issue" and should be addressed as such.[25]

The short term solution was to provide a "clear lane" for ATACMS to shoot through. This procedure required less than 20 minutes to activate and provided a lane for the ATACMS missile to fly. Although this should have been more than adequate time to fire an ATACMS mission, the lack of understanding of the system, both ATACMS and the "clear lane", along with a hesitance to use a "quick fire" mode of operation, resulted in missed missions or having to request an additional time window. It would appear that the delays in firing ATACMS were not a result of delays in getting release from the Air Force (some believe that the time delays resulted from the CORPS Fire Support Element (FSE) changing fire units or in just taking too much time to transmit the firing coordinates to the correct launcher). If for some reason the Army had needed it faster, the Air Force would have given it to us faster. Time for clearance was **never** the problem although it may have appeared so within the Army's fire support chain. The Air Force really tried to support the Army on this.[26]

But for all the "chest beating," the Air Force did no better. Their tactics were to fly an aircraft in an area

16

(called a "Basket"), high above the suspect launch point with its lights off, watching for a Scud launch. It was unsuccessful in acquiring any launches and for all their effort, the Air Force failed to engage **any** SCUD launchers although they were able to acquire and destroy many decoys.[27]

CONCLUSIONS

The CORPS FSE needs to better define its targets, both for the Air Force'S deep attack procedures as well as for the Army's. Take for example the Scud launcher. What is the payoff for killing Scud launchers? Would it be **smarter** to follow the empty launcher back to its hide position and try to kill more than just the empty launcher? We then may be in a position to kill the Scud service vehicles, personnel, additional Scud missiles, etc. We found out that almost any truck could be modified to carry, erect and fire a Scud missile. So the payoff may not be best in just going after the launcher. We need to think of the leverage point. Not necessarily the cheapest, but one that has the highest cost benefit! This is not to say that killing SCUD launchers just after they have fired is not an effective method (does tend to cause the next launch crew to think twice before firing), it just means we need to look very carefully at how we do it and when.

The hardest part is deciding what you want to kill, then putting the sensor package together. Scud launchers, hide points and resupply points were extremely difficult to find and it would

appear that they never really were found.[28] The requester must think through the process. When I see it, will I know it? When I know it, can I transmit it? And when I transmit it can I kill it? Good questions to ask during the **Decide Phase** of operations planning.[29]

There are many new systems coming down the pike that will correct or supplement the targeting needs of Army deep attack. Some of these systems are Army, while many more are National or Air Force Programs and will need Army support to help bring them to fruition.

TACTICAL EXPLOITATION OF NATIONAL CAPABILITIES (TENCAP) - WHAT IS IT AND HOW DO WE GET IT? During Desert Storm, it took too much time to link in National Assets to CENTCOM. Space Command has the mission to provide Theater Ballistic Missile (TBM) Defense Warnings and has personnel on all the CINC's staffs. What they need is direction in the CINC's Operations Plan to support who with theater dedicated Communications lines plus a distribution and maintenance plan. **Decide:** What do you want? When? How fast?[30]

Follow on Early Warning System (FEWS) - This replacement for DSP is drastically needed. This system will not only give early warning of Theater Ballistic Missile firings, but almost instantaneously the location of the launch point. This information will be in sufficient time to allow threat

assessment, where it is going to impact, and sufficient time for some Army deep attack assets to fire and kill the missile launcher before it has time to leave the firing area.[31]

Global Positicning Systea (GPS) - The system is almost totally fielded, and even with the prototype and commercial receivers, it was very effective during Desert Storm. The total system, including all satellites and tactical receivers, will provide significantly greater accuracy and be much more durable than the prototype or commercial system seen during the Persian Gulf War. Contrary to popular belief, GPS is survivable as the satellites fly in geosynchronous orbit, out of range for any known Anti-Satellite (ASAT) capability to be a realistic factor.[32] This system will be a key component of the Air Force's next generation of smart weapons, and is something that the Army should seriously consider for integration into ATACMS. GPS will continue to evolve and will soon provide detailed consolidation of threat targets and friendly force information in a real-time, 3D picture of the battlefield.[33] GPS also will provide Air Force pilots with up-to-date position information, which will allow for many improvements in AI and Close Air Support (CAS) as well as deep attack. We cannot underestimate the capability to pinpoint targets or to modify fire support measures, such as the Fire Support Coordination Line (FSCL), quickly to allow the use of Army deep attack weapons such as ATACMS.

Space Based Wide Area Surveillance (SBWAS) - If this system is procured it will provide a complete, in-theater, air, ground and sea picture. While this will help the CORPS Commander and his staff, the best part for Army deep attack is that it will, in conjunction with DSP, allow for the detection and tracking of Theater Ballistic Missile launchers.[34] This system will have tremendous application for our smaller, more responsive forces.

Constant Source - Constant Source integrates mission planning systems to provide near-real-time threat and target updates. The idea is to distribute signal intelligence products around the world that can be used, as needed, to support mission planning and execution. Although it was slow during Desert Storm, planned improvements will make it much faster. The Army plans to be able to receive this integrated threat and target update through the Commanders Tactical Terminal (CTT). The CTT is currently planned to be fielded in the CORPS All Source Production Section (ASPS) (the Army's new Intelligence fusion center) as well as in the Fire Support Element (FSE) and all CORPS MLRS Battalions. It also will integrate airborne platforms to support real-time mission execution and, with the addition of multiple input sources, it will provide a single, coherent, near-real-time display of the battlefield.[35]

The above listed systems, while not all inclusive, appear to provide the most "bang for the buck" as it pertains to Army deep attack targeting. One system currently planned that appears not

to meet this criteria is MILSTAR. Although touted as the GPS of the 90's, it does not meet the Army's needs. For about 30% of the cost, the Air Force could get 70% of the functionality of MILSTAR.[36]

<u>98</u>

UNMANNED AERIAL VEHICLE (UAV) - What can it add? Is there a role for UAV with JSTAR? With only a limited number of JSTARS, the CORPS has a need for UAV to support Division Operations, to cover JSTARS dead zones, and specific targets. The planned date fielding of this short range CORPS UAV system is FY 95-97. This CORPS short range system is being designed to fly out to 150 Km.[37]

RECOMMENDATIONS:

The concept of **Decide, Detect and Deliver** for Army Deep Attack targeting worked well during Desert Storm and should be significantly enhanced by the addition of new systems. Most of the new systems, both Army and Air Force, should be strongly supported by DCSOPS as they will supplement or enhance already existing Army systems. It goes without saying that Army systems such as CTT, Guardrail/Common Sensor, UAV, and All Sources Analysis System (ASAS)(or a fusion center of some sort) need to be supported. We **DEFINITELY** need GSM in the CORPS Fire Support Element (FSE) and CORPS MLRS Battalions. DCSOPS should look carefully at supporting other service or joint programs in an effort to enhance Army Deep Attack targeting. Such systems as

21

JSTARS and TIBS, demonstrated during Desert Storm, will significantly enhance already existing Army systems such as GRCS and CTT, respectfully.

But lesser known and non-Army specific systems like FEWS are no less important if we are going to be able to destroy theater ballistic missiles, launchers, and support equipment.

The dissemination of the information collected is just as important as the hardware. The Army must insure that it is a subscriber and user of all Deep Attack information as quickly as it becomes available. In this case the transmission of target information in a near-real-time mode is of the utmost importance, especially if the target is to be destroyed before it moves. If the target process can acquire and destroy theater ballistic missile launchers before they can move after firing, then other less mobile target sets will be a "piece of cake."

AREAS OF CONCERN

In my opinion, the area of greatest concern deals with the inter-service disputes over targets and information. Deep Attack is not solely an Air Force mission or an Army mission, but a mission to be undertaken by the **best** means available. When planning the **deliver** portion of the **decide, detect, and deliver** concept, special care should be taken in selecting the best system to service a target. It should not be based on the service, but by the most effective available means. A target heavily defended by air defense probably would not be a good target to send aircraft

against, just as a moving target may not be the best target for ATACMS. The CORPS staff should consider all available means before deciding which system to employ against a target.

OTHER TOPICS

Another area that needs to be addressed is the employment of Air Force assets against Army targets. The lack of communications between the services needs to be repaired quickly - before the next war. A better system of feedback and planning needs to be devised. The Army also need to ensure that only designated targets are serviced, or ones we don't want destroyed, will be (targets that are providing the intelligence the Army may not wish destroyed, or at least not at this time). The Army cannot allow the Air Force to randomly destroy targets just because they can acquire them.

Additionally, we need to look again at the "System of Systems" concept, automating the **Decide, Detect, and Deliver** system. The initial steps were begun in the late 80's at Ft. Sill in the Training and Doctrine Command System Manager for Rockets and Missiles office (TSM-RAMS). We need to reinitiate the work of diagramming the automation system, then produce a low-cost prototype software product that can be evaluated and refined by the Field Artillery School. We must have a Command and Control system that will transmit the **Detect** portion to the proper attack system in near-real-time. In the

battlefield of the future, it will be impossible to attack all
deep attack target sets with the limited assets available. The
Army needs to continue work on the automation of this process,
and as a result, significantly enhance the effectiveness of those
limited assets available.

ENDNOTES

1. Classified source, see author for details.

2. James E. Nolan and Albert D. Wheelon, "Third World Ballistic
Missile", Scientific American, August 1990, p. 34

3."Cashe On Hand", U.S. NEWS & WORLD REPORT, February 10,1992,
p. 22.

2. National Security Agency, National Security Strategy Exercise,
Supplemental Reading, p.2.

5. Department of the Army, "Tactics, Techniques, and Procedures For
The Targeting Process", FM 6-20-10, p. 1

6. DODD 5100.1, dtd 25 September 1987, page 19

7. Col Jerry Hansen, USA., Interview on October 20, 1991, Col
Hansen is the Division Chief for Fire Support Systems, Deputy Chief
of Staff for Operations.

8. Ibid.,p. 1-3.

9.Ibid., p.1-3.

10. Ibid., p 1-3.

11. Ibid., p. 1-3.

12. Ibid., p. 2-1.

13. Ibid., p. 1-4.

14. Ibid., p. 1-4.

15. Ibid., p. 1-4.

16. Col David A. Schulte, Interview on January 14, 1992. Col Schulte was the Officer In-charge of the Battlefield Coordination Element (BCE), ARCENT, during Desert Shield and Desert Storm.

17. Ibid., COL David A. Schulte, Interview

18. Col Philip C. Mancum, USA., Interview on November 19,1991. Col Mancum is the Division Chief for Intelligence Systems, Office of the Deputy Chief of Staff for Operations, Washington D.C.

19. Ibid, Col Philip C. Mancum, Interview.

20. Ibid., Col David A. Schulte, Interview

21. Ibid., Col Philip C. Mancum, Interview.

22. Ibid., Col Philip C. Mancum, Interview.

23. BG Robert S. Dickman, USAF., Briefing to the Space DIS. on February 13, 1992. BG Dickman is the deputy director, space programs, Office of the Secretary of the Air Force for Acquisition, Washington, D.C.

24. Ibid., Col David A. Schulte, Interview.

25. Ibid., Col David A. Schulte, Interview.

26. Ibid., Col David A. Schulte, Interview.

27. COL Steven A. Stadler, USAF, Interview on November 13,1991. Col Stadler is the Deputy Plans and Programs, Headquarters, Air Force Space Command, Peterson Air Base, CO.

28. Ibid., Col Steven A. Stadler, Interview.

29. Col(P) Howard J. Von Kaenel, USA., Interview on November 13, 1991. Col (P) Von Kaenel was the 82d Airborne Division Artillery (DIVARTY) Commander during Desert Shield and Desert Storm. He is currently the Director of Combat Development of the Field Artillery School and Center, Fort Sill, Oklahoma.

30. Col Thomas McMahon, USAF. Briefing on October 14, 1991 to the Combined Class of the National War College and the Industrial College of the Armed Force on "The Use of Space During Desert Storm".

31. Ibid., BG Robert S. Dickman, Briefing.

32. Ibid., BG Robert S. Dickman, Briefing.

33. Ibid., BG Robert S. Dickman, Briefing.

34. Ibid., BG Robert S. Dickman, Briefing.

35. Ibid., BG Robert S. Dickman, Briefing.

36. **Note.** By the use of cost benefit trade-offs, the Air Force could incorporated current commercial and military systems and achieve at least 70% of MILSTAR's capability for less than 30% of the cost and it would be in a more usable format.

37. Ibid., Col Philip C. Mancum, Interview

GPS
Global Positioning System - The NAVSTAR GPS is a space-based
radio navigation and time distribution system. GPS will provide
precise, continuous, all-weather, common grid, worldwide
navigation and timing information to air, land, sea and space-
based users.[3]

GRCS
Guard Rail/Common Sensor - An airborne Army family of systems
that intercepts and locates communications, radars and other
sources of electronic emissions associated with enemy command and
control and weapons systems.[4]

GSM
Ground Station Module - The GSM is a tactical multisensor image
intelligence processing and exploitation system, primarily data
from JSTARS.

JSTARS
Joint Surveillance Target Attack Radar System - An airborne
infrared detection and tracking system

MILSTAR
Milstar will provide worldwide jam-resistant communication links
between the National Command Authority and the forces in the
field, as well as connecting those forces with one another.[5]

SBWAS
Spaced Based Wide Area Surveillance System - A conceptional
program to provide wide area signal intelligence.

TENCAP
Tactical Exploitation of National Capabilities - Whereas space
reconnaissance is currently strategic, in that it collects
intelligence that is for the most part considered to be of long-
term value (ship construction, missile testing, and so forth) and
is funneled directly to Washington for digestion and
implementation, tactical intelligence bypasses the national
intelligence establishment and goes directly to the forces in the
field, were it can be used immediately.[6]

TIBS
Tactical Information Broadcast System - A satellite based
communications relay system. During Desert Storm it was used to
disseminate Rivet Joint information.

UAV
Unmanned Aerial Vehicle - UAV will give the ground commander
near-real-time battlefield information related to reconnaissance,
surveillance and target acquisition.

1.Headquarters Department of the Army, ARMY RD&A BULLETIN, March -
April 1992, p.29.

2.Ibid., p. 28.

3.AUSA. 1991 ARMY GREEN BOOK, October 1991, p. 260.

4.Ibid., AUSA, p. 265.

5.William E. Burrows, DEEP BLACK, Berkeley Books, New York, 1988, p.314.

6.Ibid., DEEP BLACK, p. 313

GLOSSARY

A

AI	Air Interdiction
AFCENT	Air Force Component
ASPS	All-Source Production Section
ASAS	All-Source Analysis System
ATACMS	Army Tactical Missile System
ATO	Air Target Order

B

BAI	Battlefield Air Interdiction

C

CAS	Close Air Support
CENTCOM	Central Command
CG	Commanding General
CINC	Commander in Chief (Unified or Specified Command)
CONUS	Continental United States
CS	Constant Source
CTT	Commander Tactical Terminal

D

DAT	Deep Attack Target
DIVARTY	Division Artillery Brigade
DCSOPS	Deputy Chief of Staff for Operations
DSP	Defense Support Program

E

EAC	Echelons Above Corps

F

FAC	Forward Air Controller
FEBA	Forward Edge of the Battle Area
FEWS	Follow on Early Warning System
FLOT	Forward Line of Troops
FM	Field Manual
FSCL	Fire Support Coordination Line

FSE		Fire Support Element
	G	
GPS		Global Positioning System
GR/CS		Guard Rail/Common Sensor
GSM		Ground Station Module
	H	
HPT		High Priority Target
HPTL		High Priority Target List
	I	
IR		Information Requirement
	J	
JCS		Joint Chiefs of Staff
JFACC		Joint Forces Air Component Commander
JSTARS		Joint Services Tactical Airborne Reconnaissance System
	K	
KM		Kilometer
	L	
LCC		Land Component Commander
	M	
MLRS		Multiple Launch Rocket System
	N	
	O	
OPORD		Operations Order
	P	
PIR		Priority Information Requirement
	R	
	S	
SAR		Synthetic Appiture Radar
SBWAS		Space-Based Wide Area Surveillance

T

TA	Target Acquisition
TDA	Tactical Damage Assessment
TENCAP	Tactical Exploitation of National Capabilities
TA	Target Acquisition
TACAIR	Tactical Air
TACFIRE	Tactical Fire Direction System
TAI	Target Area of Interest
TBM	Theater Ballistic Missile
TIBS	Tactical Information Broadcast
TRADOC	U.S. Training and Doctrine Command
TSM-RAMS	TRADOC System Manager for Rockets and Missiles Systems
TVA	Target Value Analysis

U

UAV	Unmanned Aerial Vehicle
US	United States
USAF	United States Air Force

V

W

WAS	Wide Area Search

XYZ